



STAR MACHINE, INC.

64097

Engineering
Special machines
Fixtures, tools, dies
Precision machining

1620 Middlebury Street
P.O. Box 1506
Elkhart, Indiana 46515
Telephone (219) 295-6480

March 30, 1989

Ms. Susan Swales
Superfund Program Management Branch SHSM-12
U.S. Environmental Protection Agency
230 South Dearborn Street
Chicago, Illinois 60604

Re: Himco Landfill, Elkhart, Indiana, County Road 10.

Dear Susan:

Star Machine has contracted with Himco to dispose of company refuse for at least the last 10 years. We are engaged in the designing and building of specialty tooling and special machine products. (SIC code 3599). Our basic manufacturing process would involve the milling, drilling, tapping and grinding of raw materials used to produce our products.

The primary waste products generated would be general refuse (such as generated in a home; primarily paper products) and miscellaneous scrap metals and shavings. Most of the metals are in a solid form with a small percentage being in the form of sludge. These waste products are loaded into a waste hopper supplied by Himco. They pick up the unit when full and dispose of the waste products. Where and how these products are disposed of by Himco are unknown by us.

The material disposed of is stable and does not include any hazardous material. As requested, we have attached invoices for all pick up of materials for the years of 1987, 1988 and 1989. We are also providing the associated MSDS sheets for the scrap metals which are included in our refuse hopper. I believe this information complies with your request. Should you need any additional information on this matter, please feel free to contact me.

Very Truly Yours,

STAR MACHINE, INC.

David W. Steede

David W. Steede
President

DWS/hb



BETHLEHEM STEEL CORPORATION AND SUBSIDIARY COMPANIES

MATERIAL SAFETY DATA SHEET

-----GENERAL INFORMATION -----

Manufacturer:
Bethlehem Steel Corporation
Bethlehem, PA 18016

Creation Date: 11/'85
Revision Date: NA

For Additional Information, contact:
Occupational Health and Safety Division
215/694-5105 or 7066

-----PRODUCT IDENTIFICATION -----

Product Name:
MILD STEEL GRADES

Formula
NA

Synonym(s):
NA

Chemical Family:
NA

-----TYPICAL CHEMICAL COMPOSITION (1) -----

Ingredient (2)	CAS No.	Wt. %	Permissible Air Level (3)	
			OSHA PEL	ACGIH TLV
Iron	7439-89-6	Balance	10(4)	5(4)
Manganese	7439-96-5	.25-2.0	5(5)	1.0(6)
Trace Elements	NA	LT 2.0	NA	NA

Nonmetallic Coatings (Optional): See "Additional or Miscellaneous Information"

-----PHYSICAL DATA -----

Physical State:
Solid

Specific Gravity:
7.6-7.8

Appearance and Odor:
Gray metal; odorless

Vapor Pressure:
NA

Boiling Point:
NA

Vapor Density:
NA

Melting Point:
2800°F

Evaporation Rate:
NA

Solubility in Water:
NA

% Volatile by Volume:
NA

pH:
NA

This product does not meet the criteria of a hazardous chemical as defined by the Federal Occupational Safety and Health Hazard Communication Standard (29 CFR 1910.1200(c)). This form is being provided solely as general information and should not be construed as a determination that the product is a hazardous chemical. All sales of this product are subject to Bethlehem's Standard Terms and Conditions of Sale. BETHLEHEM MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING OR TRADE.

-----FIRE AND EXPLOSION HAZARD DATA -----

Not Applicable

-----REACTIVITY DATA -----

Stability:

Stable

Incompatibilities (Materials to avoid):

Acids

Hazardous Decomposition Products:

Fumes and/or gases produced from welding or burning operations.

Polymerization:

Will not occur

-----HEALTH HAZARD DATA -----

Health Effects/Signs and Symptoms:

Exposure to the constituents of these products will only occur during activities such as welding or burning. However, because of the low toxicity of the components and/or the low air levels anticipated during such activities, these products are not considered to be hazardous chemicals as defined by the federal OSHA Hazard Communication Standard.

However, for additional information, users may wish to consult the American National Standard on "Safety in Welding and Cutting" (ANSI Z49.1 - 1983) which is published by the American Welding Society.

Usual Route(s) of Entry:

Inhalation

Medical Conditions Possibly Aggravated:

Chronic diseases or disorders of the respiratory system.

Carcinogen Information:

Not considered to be a carcinogen.

-----FIRST AID AND MEDICAL EMERGENCY PROCEDURES -----

Eye Contact:

Not anticipated to pose a significant eye hazard.

Skin Contact:

Not anticipated to pose a significant skin hazard.

Inhalation:

Remove from excessive exposure levels unless proper respiratory protection is worn.

Ingestion:

Not considered an ingestion hazard.

-----OCCUPATIONAL EXPOSURE CONTROL MEASURES -----

Engineering Controls (Ventilation, etc.):

Ventilation should be sufficient to maintain exposure levels below the applicable exposure limit.

ever, levels may even fall outside of the usual concentration ranges.

- (2) Common names, if applicable, appear in parentheses following the chemical names.
- (3) All values, unless otherwise specified, refer to 8-hour time-weighted average concentrations and units are in mg/M^3 .
- (4) As iron oxide fume.
- (5) Ceiling value.
- (6) As manganese fume.

Abbreviations:

NA = Not Applicable
NE = Not Established
UK = Unknown (No applicable information was found).
GT = Greater Than
LT = Less Than

Work Practices (Handling and Storage, etc):

Arc or spark generated when welding or burning on these products could be a source of ignition for combustible or flammable materials.

Eye Protection:

Not anticipated to pose a significant eye hazard.

Skin Protection:

Not anticipated to pose a significant skin hazard.

Respiratory Protection:

When engineering controls are not sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH-approved respirator for dusts and metal fumes within the use limits of the respirator.

-----SPILL, LEAK, AND DISPOSAL INFORMATION -----

Procedures to Follow if Material is Released or Spilled:

NA

Waste Disposal Method(s):

Any excess product can be recycled for further use or disposed by methods which are in accordance with local, state, and federal regulations.

-----ADDITIONAL OR MISCELLANEOUS INFORMATION -----

Maintaining air levels of iron oxide fume and dusts below its TLV should be sufficient to control for airborne concentrations of other constituents.

Nonmetallic coatings may be applied (often at the customer's request) to the surface of steel products. These are usually classified as protective coatings or lubricants. The typical nonmetallic coatings are as follows:

<u>Steel Product Form</u>	<u>Possible Coatings Applied</u>
Bars:	rust preventive oils
Sheet Products:	rust preventive oils, chromate treatment
Rope:	epoxy coatings, lacquer
Rod Products:	lubricants - zinc phosphate, calcium oxide (lime), sodium meta silicate, sodium stearate
Wire Products:	rust preventive oils; lubricants - oils, borax soaps, molybdenum disulfide
Reinforcing Bars:	epoxy coatings, paints
Structural:	paints

The possible presence of these coatings on steel products should be recognized and considered when evaluating potential employee health hazards and exposures during welding or other dust/fume generating activities.

Footnotes:

- (1) Concentrations may vary somewhat between batches or lots. Where possible, a concentration range is indicated. Occasionally, how-



Material Safety Data Sheet for Armco Products

Manufacturing Facility, Company, or Subsidiary: Several Facilities
Address: 703 Curtiss Street, Middletown, Ohio 45043
Phone (during normal business hours): Corporate: 513/425-5501
Date of Preparation: October 1, 1985 SSF
Product Name or Number: Low Carbon (Mild Steel) Steel Products, all grades

SECTION I — COMPONENT DATA:

Chemical Components	C.A.S. Number	% Wt.
Primary Metals:		
Iron	7439-89-6	> 98
Manganese	7439-96-5	< 2

Coatings:

A thin coating of petroleum-based oil or acrylic polymer (< 1% total weight of product) may be added to the surface as a corrosion inhibitor or preventative.

SECTION II — PHYSICAL DATA:

Boiling Point (°F): Not Applicable (N/A)
Vapor Density (Air = 1): N/A
Specific Gravity (H₂O = 1): Approx. 8
Evaporative Rate (Ethyl Ether = 1): N/A

Vapor Pressure (mmHg @ 20°C): N/A
Solubility in Water: N/A
Percent Volatile By Volume: N/A
pH Information: N/A

Appearance and Odor: Odorless solid with metallic lustre. Available as sheets, strip, bars, rods, wire, billets, pipe and tubing.

SECTION III — FIRE & EXPLOSION HAZARD DATA:

Flash Point (°F): N/A
Flammability Limits (%/Vol): LEL: N/A
Auto-Ignition Temperature (°F): N/A
Special Fire-Fighting Instructions: N/A

Method Used: N/A
UEL: N/A
Extinguishing Media: No fire or explosion hazards.
Unusual Fire and Explosion Hazards: N/A

SECTION IV — REACTIVITY DATA:

Stability (conditions to avoid): Stable

Incompatibility (materials to avoid): None

Hazardous Decomposition Products: Metal fumes and certain noxious gases, such as CO, may be produced during welding or burning operations. See Sections V and IX for further information.

Hazardous Polymerization: Will not occur.

SECTION V — HEALTH HAZARD DATA:

Primary Route(s) of Entry: Inhalation, skin contact.

Effects of Exposure: No toxic effects would be expected from its inert solid form. Prolonged, repeated exposure to fumes or dusts generated during heating, cutting, brazing or welding may cause adverse health effects associated with the following constituents:

Inhalation:

Iron: Siderosis, no fibrosis.

Manganese: Pneumonitis, CNS involvement, including irritability, difficulty in walking, speech disorders, compulsive behavior, mask-like face and a Parkinson-like syndrome.

Oil Mist: Pulmonary effects.

Note: Some constituents pose more potential hazards than others, depending upon their inherent toxicity and concentration. Of special concern are iron and perhaps manganese and oil mist.

Skin Contact:

May cause irritation. Oil mist may cause dermatitis.

Eye Contact:

May cause irritation.

Ingestion:

May cause irritation of the mouth and throat.

Exposure Limits:

Chemical Components	OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)	NTP Listed	IARC Listed
Iron	10 (as Fe ₂ O ₃ fume)	5 (as Fe ₂ O ₃ fume)	No	No
Manganese	5	1.0 (as fume)	No	No
Oil Mist, Mineral	5	5	Yes ¹	Yes ¹

¹Listed as "soots, tars, and mineral oils."

SECTION VI — EMERGENCY & FIRST-AID PROCEDURES:

Inhalation: Seek medical attention, if necessary.

Skin: If irritation develops, remove contaminated clothing immediately, and wash contaminated skin with soap or mild detergent and water for five minutes. If irritation persists, seek medical attention.

Eyes: In case of contact, immediately wash eyes with large amounts of water for fifteen minutes, occasionally lifting the lower and upper lids. Seek medical attention, if necessary.

Ingestion: Seek medical attention, if necessary.

SECTION VII — SPECIAL HANDLING INFORMATION:

Ventilation: Ventilation, as described in the *Industrial Ventilation Manual* produced by the American Conference of Governmental Industrial Hygienists, shall be provided in areas where exposures are above the permissible exposure limits or threshold limit values specified by OSHA or other local, state, and federal regulations.

Respiratory Protection: A properly fitted, NIOSH-approved, dust-fume respirator should be worn during welding or burning whenever welding fumes exceed the threshold limit value (TLV) or other recommended limits, in accordance with the OSHA Respiratory Protection Standard (29 CFR 1910.134).

Protective Clothing: Use appropriate protective clothing, such as welder's aprons and gloves, when welding or burning.

Eye Protection: Use face shield (8" minimum) and/or goggles when welding, burning, or grinding.

SECTION VIII — SPILL, LEAK & DISPOSAL PROCEDURES:

Action to Take for Spills (use appropriate safety equipment): N/A

Waste Disposal Method: N/A

SECTION IX — SPECIAL PRECAUTIONS/ADDITIONAL INFORMATION:

Precautions to be Taken in Handling and Storage: None

DOT Information:

Hazardous Material Proper Shipping Name: N/A

Hazard Class: N/A

Identification Number: N/A

EPA Hazardous Waste Number: N/A

Additional Information: During welding, precautions should be taken for airborne contaminants and noxious gases that may originate from the welding process or from components of the welding rod. Of special concern are silica or silicates, or both; fluorides; copper; manganese; carbon monoxide and nitrogen oxides. Arc and sparks generated when welding with this product could be a source of ignition for combustible and flammable materials.

While the information and recommendations set forth on this data sheet are believed to be accurate as of the present date, Amco makes no warranty with respect thereto and disclaims all liability from reliance thereon.



MATERIAL SAFETY DATA SHEET STEEL PRODUCTS

USS CODE NO. 3C011

ORIGINAL ISSUE DATE: 8/1/85 REVISED:

I. IDENTIFICATION		INFORMATION & EMERGENCY TELEPHONE NUMBERS (412) 433-6840 (8 a.m. - 5 p.m., Mon.-Fri.) (412) 433-6811 (Off Hour Emergencies)	
PRODUCT NAME: Hot or Cold Rolled Carbon Steel Sheet/Strip and Hot Rolled Skelp		MANUFACTURER: U. S. Steel Corporation P. O. Box 206 (MSDS) Pittsburgh, PA 15230	
COMMON NAME(S): Same			
CAS NO.: 65997-19-5			
II. INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS			
NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard (See Section VI.).			
BASE METAL, ALLOYING ELEMENTS AND METALLIC COATINGS	% WEIGHT	EXPOSURE LIMITS	
		OSHA PEL	ACGIH TLV
Base Metal: Iron	Balance	10 mg/M ³ for iron oxide fume	5 mg/M ³ for iron oxide fume
Alloying Elements: Carbon	.005/.60	None established	None established
Manganese	.05/1.50	(c) 5 mg/M ³	(c) 5 mg/M ³ -dust 1 mg/M ³ -fume
Phosphorus	.15 max	None for inorganic phosphates	None for inorganic phosphates
Sulfur	.05 max	13 mg/M ³ as SO ₂	5 mg/M ³ as SO ₂
Aluminum	.10 max	None established	10 mg/M ³
Oil coating may be used;		(c) denotes "ceiling limit" which is not to be exceeded at any time see Annex II.	
NOTE: All commercial metals contain small amounts of various elements in addition to those specified. These small quantities, frequently referred to as "trace" or "residual" elements, generally originate in the raw materials used. Typical levels of commonly involved trace or residual elements that may be encountered in steel products are provided in Annex I so that their potential hazards may be considered.			
III. PHYSICAL DATA			
MELTING POINT BASE METAL: 2750° F	METALLIC COATING: Not applicable.		APPEARANCE AND ODOR: Metallic Gray, No Odor
IV. FIRE AND EXPLOSION HAZARD DATA			
STEEL PRODUCTS IN THE SOLID STATE PRESENT NO FIRE OR EXPLOSION HAZARD.			
V. REACTIVITY DATA			
Stable under normal conditions of use, storage, and transport. Will react with strong acid to liberate hydrogen. At temperatures above the melting point, may liberate fumes containing oxides of iron and alloying elements.			

VI. HEALTH HAZARD DATA

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. However, operations, such as, burning, welding, sawing, brazing, grinding, and possibly machining, etc., which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates, may present health hazards.

EFFECTS OF OVEREXPOSURE:

MAJOR EXPOSURE HAZARD

☒ INHALATION

☐ SKIN CONTACT

☐ EYE CONTACT

☐ INGESTION

Chronic inhalation of high concentrations of iron oxide fumes or dusts may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

The inhalation of high concentrations of freshly formed oxide fumes and dusts of Manganese, Copper, Lead and/or Zinc in the respirable particle size range can cause an influenza-like illness termed metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

EMERGENCY AND FIRST AID PROCEDURES For overexposure to airborne fumes and particulates, remove exposed person to fresh air. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated. Seek medical attention promptly.

Treat metal fume fever by bed rest, and administer a pain and fever reducing medication.

VII. SPILL OR LEAK PROCEDURES

NOT APPLICABLE TO STEEL IN THE SOLID STATE.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY: NIOSH/MSHA-approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends on the magnitude of exposure.

SKIN:
Protective gloves should be worn as required for welding, burning or handling operations.

EYE:
Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.

VENTILATION: Local exhaust ventilation should be provided when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

OTHER PROTECTIVE EQUIPMENT:
Depending upon the conditions of use and specific work situations, additional protective equipment and/or clothing may be required to control exposures.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Avoid breathing metal fumes and/or dusts.

OTHER COMMENTS:

No additional comments are believed to be necessary for these products.



MATERIAL SAFETY DATA SHEET STEEL PRODUCTS

USS CODE NO. 1C003

ORIGINAL ISSUE DATE: 8/1/85 REVISED:

I. IDENTIFICATION

PRODUCT NAME: Hot Rolled Carbon Steel -
Structural Shapes, Sheet Piling & H Piling

COMMON NAME(S): Example - ASTM A36

CAS NO.: 65997-19-5

INFORMATION & EMERGENCY TELEPHONE NUMBERS

(412) 433-6840 (8 a.m. - 5 p.m., Mon.-Fri.)

(412) 433-5811 (Off Hour Emergencies)

MANUFACTURER:

U. S. Steel Corporation

P. O. Box 206 (MSDS)

Pittsburgh, PA 15230

II. INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard (See Section VI.).

BASE METAL, ALLOYING ELEMENTS AND METALLIC COATINGS	% WEIGHT	EXPOSURE LIMITS	
		OSHA PEL	ACGIH TLV
Base Metal: Iron	98/99	10 mg/M ³ for iron oxide fume	5 mg/M ³ for iron oxide fume
Alloying Elements: Carbon	.30 max	None established	None established
Manganese	.25/1.20	(c) 5 mg/M ³	(c) 5 mg/M ³ -dust 1 mg/M ³ -fume
Phosphorus	.04 max	None for inorganic phosphates	None for inorganic phosphates
Sulfur	.001/.05	13 mg/M ³ as SO ₂	5 mg/M ³ as SO ₂
Silicon	.35 max	None established	10 mg/M ³ -Total dust 5 mg/M ³ -Respirable dust
Aluminum	0.10 max	None established	10 mg/M ³
(c) denotes "ceiling limit" which is not to be exceeded at any time			

NOTE: All commercial metals contain small amounts of various elements in addition to those specified. These small quantities, frequently referred to as "trace" or "residual" elements, generally originate in the raw materials used. Typical levels of commonly involved trace or residual elements that may be encountered in steel products are provided in Annex I so that their potential hazards may be considered.

III. PHYSICAL DATA

MELTING POINT

BASE METAL: 2750° F

METALLIC COATING: Not applicable.

APPEARANCE

AND ODOR: Metallic Gray,
No Odor

IV. FIRE AND EXPLOSION HAZARD DATA

STEEL PRODUCTS IN THE SOLID STATE PRESENT NO FIRE OR EXPLOSION HAZARD.

V. REACTIVITY DATA

Stable under normal conditions of use, storage, and transport. Will react with strong acid to liberate hydrogen. At temperatures above the melting point, may liberate fumes containing oxides of iron and alloying elements.

VI. HEALTH HAZARD DATA

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. However, operations, such as, burning, welding, sawing, brazing, grinding, and possibly machining, etc., which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates, may present health hazards.

EFFECTS OF OVEREXPOSURE:

MAJOR EXPOSURE HAZARD

☒ INHALATION

☐ SKIN CONTACT

☐ EYE CONTACT

☐ INGESTION

Chronic inhalation of high concentrations of iron oxide fumes or dusts may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

The inhalation of high concentrations of freshly formed oxide fumes and dusts of Manganese, Copper, Lead and/or Zinc in the respirable particle size range can cause an influenza-like illness termed metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

EMERGENCY AND FIRST AID PROCEDURES For overexposure to airborne fumes and particulates, remove exposed person to fresh air. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated. Seek medical attention promptly.

Treat metal fume fever by bed rest, and administer a pain and fever reducing medication.

VII. SPILL OR LEAK PROCEDURES

NOT APPLICABLE TO STEEL IN THE SOLID STATE.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY: NIOSH/MSHA-approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends on the magnitude of exposure.

SKIN:

Protective gloves should be worn as required for welding, burning or handling operations.

EYE:

Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.

VENTILATION: Local exhaust ventilation should be provided when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

OTHER PROTECTIVE EQUIPMENT:

Depending upon the conditions of use and specific work situations, additional protective equipment and/or clothing may be required to control exposures.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Avoid breathing metal fumes and/or dusts.

OTHER COMMENTS:

No additional comments are believed to be necessary for these products.



MATERIAL SAFETY DATA SHEET STEEL PRODUCTS

USS CODE NO. 1C006

ORIGINAL ISSUE DATE: 8/1/85 REVISED:

I. IDENTIFICATION		INFORMATION & EMERGENCY TELEPHONE NUMBERS (412) 433-6840 (8 a.m. - 5 p.m., Mon.-Fri.) (412) 433-6811 (Off Hour Emergencies)	
PRODUCT NAME: Wire Rods, Hot Rolled Bars, Cold Finished Bars		MANUFACTURER: U. S. Steel Corporation P. O. Box 206 (MSDS) Pittsburgh, PA 15230	
COMMON NAME(S): Carbon Steel - Example AISI Grade 1040 CAS NO.: 65997-19-5			
II. INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS			
NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard (See Section VI.).			
BASE METAL, ALLOYING ELEMENTS AND METALLIC COATINGS	% WEIGHT	EXPOSURE LIMITS	
		OSHA PEL	ACGIH TLV
Base Metal: Iron	98/99	10 mg/M ³ for iron oxide fume	5 mg/M ³ for iron oxide fume
Alloying Elements: Carbon	.01/1.10	None established	None established
Manganese	.25/1.65	(c) 5 mg/M ³	(c) 5 mg/M ³ -dust 1 mg/M ³ -fume
Phosphorus	.04 max	None for inorganic phosphates	None for inorganic phosphates
Sulfur	.001/.35	13 mg/M ³ as SO ₂	5 mg/M ³ as SO ₂
Vanadium	.01/.25	(c) 0.5 mg/M ³ as V ₂ O ₅ dust (c) 0.1 mg/M ³ as V ₂ O ₅ fume	0.05 mg/M ³ as respirable dust and fume
Columbium	.01/.25	None established	None established
Aluminum	.001/.100	None established	10 mg/M ³
Bismuth	.01/.15	None for Bismuth metal & oxide (c) denotes "ceiling limit" which is not to be exceeded at any time	None for Bismuth metal & oxide
Coating of oil or dry lube may be used; see Annex II.			
NOTE: All commercial metals contain small amounts of various elements in addition to those specified. These small quantities, frequently referred to as "trace" or "residual" elements, generally originate in the raw materials used. Typical levels of commonly involved trace or residual elements that may be encountered in steel products are provided in Annex I so that their potential hazards may be considered.			
III. PHYSICAL DATA			
MELTING POINT BASE METAL: 2650-2750° F		METALLIC COATING: Not applicable.	APPEARANCE AND ODOR: Metallic Gray, No Odor
IV. FIRE AND EXPLOSION HAZARD DATA			
STEEL PRODUCTS IN THE SOLID STATE PRESENT NO FIRE OR EXPLOSION HAZARD.			
V. REACTIVITY DATA			
Stable under normal conditions of use, storage, and transport. Will react with strong acid to liberate hydrogen. At temperatures above the melting point, may liberate fumes containing oxides of iron and alloying elements.			

VI. HEALTH HAZARD DATA

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. However, operations, such as, burning, welding, sawing, brazing, grinding, and possibly machining, etc., which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates, may present health hazards.

EFFECTS OF OVEREXPOSURE:

MAJOR EXPOSURE HAZARD

☒ INHALATION ☐ SKIN CONTACT ☐ EYE CONTACT ☐ INGESTION

Chronic inhalation of high concentrations of iron oxide fumes or dusts may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

The inhalation of high concentrations of freshly formed oxide fumes and dusts of Manganese, Copper, Lead and/or Zinc in the respirable particle size range can cause an influenza-like illness termed metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

EMERGENCY AND FIRST AID PROCEDURES For overexposure to airborne fumes and particulates, remove exposed person to fresh air. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated. Seek medical attention promptly.

Treat metal fume fever by bed rest, and administer a pain and fever reducing medication.

VII. SPILL OR LEAK PROCEDURES

NOT APPLICABLE TO STEEL IN THE SOLID STATE.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY: NIOSH/MSHA-approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends on the magnitude of exposure.

SKIN: Protective gloves should be worn as required for welding, burning or handling operations.

EYE: Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.

VENTILATION: Local exhaust ventilation should be provided when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

OTHER PROTECTIVE EQUIPMENT: Depending upon the conditions of use and specific work situations, additional protective equipment and/or clothing may be required to control exposures.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Avoid breathing metal fumes and/or dusts.

OTHER COMMENTS:

No additional comments are believed to be necessary for these products.



MATERIAL SAFETY DATA SHEET

STEEL PRODUCTS

USS CODE NO. 1C007

ORIGINAL ISSUE DATE: 8/1/85 REVISED:

I. IDENTIFICATION

PRODUCT NAME: Wire Rods, Hot Rolled Bars, Cold Finished Bars

COMMON NAME(S): Carbon Leaded Steel - Example AISI Grade 10L45

CAS NO.: 85997-19-5

INFORMATION & EMERGENCY TELEPHONE NUMBERS

(412) 433-8840 (8 a.m. - 5 p.m., Mon.-Fri.)
(412) 433-5811 (Off Hour Emergencies)

MANUFACTURER:
U. S. Steel Corporation
P. O. Box 206 (MSDS)
Pittsburgh, PA 15230

II. INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard (See Section VI.).

BASE METAL, ALLOYING ELEMENTS AND METALLIC COATINGS	% WEIGHT	EXPOSURE LIMITS	
		OSHA PEL	ACGIH TLV
Base Metal: Iron	97/99	10 mg/M ³ for iron oxide fume	5 mg/M ³ for iron oxide fume
Alloying Elements:			
Carbon	.01/1.10	None established	None established
Manganese	.25/1.65	(c) 5 mg/M ³	(c) 5 mg/M ³ -dust 1 mg/M ³ -fume
Phosphorus	.04 max	None for inorganic phosphates	None for inorganic phosphates
Sulfur	.001/.35	13 mg/M ³ as SO ₂	5 mg/M ³ as SO ₂
Vanadium	.01/.25	(c) 0.5 mg/M ³ as V ₂ O ₅ dust (c) 0.1 mg/M ³ as V ₂ O ₅ fume	0.05 mg/M ³ as respirable dust and fume
Columbium	.01/.25	None established	None established
Aluminum	.001/.100	None established	10 mg/M ³
Lead	.15/.35	0.05 mg/M ³	0.15 mg/M ³
		(c) denotes "ceiling limit" which is not to be exceeded at any time	

Coating of oil or dry lube may be used; see Annex II.

NOTE: All commercial metals contain small amounts of various elements in addition to those specified. These small quantities, frequently referred to as "trace" or "residual" elements, generally originate in the raw materials used. Typical levels of commonly involved trace or residual elements that may be encountered in steel products are provided in Annex I so that their potential hazards may be considered.

III. PHYSICAL DATA

MELTING POINT
BASE METAL: 2650-2750° F

METALLIC COATING: Not applicable.

APPEARANCE AND ODOR: Metallic Gray, No Odor

IV. FIRE AND EXPLOSION HAZARD DATA

STEEL PRODUCTS IN THE SOLID STATE PRESENT NO FIRE OR EXPLOSION HAZARD.

V. REACTIVITY DATA

Stable under normal conditions of use, storage, and transport. Will react with strong acid to liberate hydrogen. At temperatures above the melting point of lead (620° F), may liberate lead fume.

VI. HEALTH HAZARD DATA

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. However, operations, such as, burning, welding, sawing, brazing, grinding, and possibly machining, etc., which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates, may present health hazards.

EFFECTS OF OVEREXPOSURE:

MAJOR EXPOSURE HAZARD

☒ INHALATION ☐ SKIN CONTACT ☐ EYE CONTACT ☐ INGESTION

Chronic inhalation of high concentrations of iron oxide fumes or dusts may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

The inhalation of high concentrations of freshly formed oxide fumes and dusts of Manganese, Copper, Lead and/or Zinc in the respirable particle size range can cause an influenza-like illness termed metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

Inhalation or ingestion of lead particles may result in lead-induced systemic toxicity. Symptoms of lead poisoning include abdominal cramps, anemia, muscle weakness and headache. Prolonged exposures can cause behavioral changes, kidney damage, peripheral neuropathy characterized by decreased hand-grip strength and adverse human reproductive effects.

EMERGENCY AND FIRST AID PROCEDURES

For overexposure to airborne fumes and particulates, remove exposed person to fresh air. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated. Seek medical attention promptly. Treat metal fume fever by bed rest, and administer a pain and fever reducing medication. Workers who experience the symptoms of lead poisoning should be removed from exposure and receive medical care and guidance. Detailed biological testing and evaluation of possible exposure conditions are required to diagnose and control lead poisoning. Restriction from exposure to lead may be required.

VII. SPILL OR LEAK PROCEDURES

NOT APPLICABLE TO STEEL IN THE SOLID STATE.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY: NIOSH/MSHA-approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends on the magnitude of exposure.

SKIN:

Protective gloves should be worn as required for welding, burning or handling operations.

EYE:

Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.

VENTILATION: Local exhaust ventilation should be provided when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

OTHER PROTECTIVE EQUIPMENT:

Provide clean coveralls or similar full-body protective clothing on a weekly basis to workers exposed to lead concentrations above 0.05 mg/M³. (Daily, if exposures exceed 0.2 mg/M³)

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Avoid breathing metal fumes and/or dusts.

OTHER COMMENTS:

No additional comments are believed to be necessary for these products.

~~Copper & Brass Sales~~

Central Steel & Wire Co.

Material Safety Data Sheet

May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

U.S. Department of Labor

Occupational Safety and Health Administration
(Non-Mandatory Form)



IDENTIFY (As Used on Label and Use) Alloy steel-see
attached sheet & invoice for grade(s)

Note: Blank spaces are not permitted. If any form is not applicable, or no
information is available, the space must be marked to indicate this.

Section I

Manufacturer's Name

The Timken Company

Address (Number, Street, City, State, and ZIP Code)
1835 Dueber Avenue, S. W.

Canton, OH 44706

Emergency Telephone Number

(216) 438-3000

Telephone Number for Information

(216) 438-3544

Date Prepared

1985/10/22

Signature of Preparer (control)

M. W. Smith

Section II — Hazardous Ingredients/Identity Information

Hazardous Component (Specify Chemical Identity, Common Name(s))	CAS #	OSHA PEL	ACGIH TLV	% (approx.)
Carbon (C)	7440-44-0	3.5 mg/M ³	3.5 mg/M ³ (carbon black)	.07 to 1.10%*
Manganese (Mn)	7439-96-5	5 mg/M ³	5 mg/M ³ (ceiling limit)	.25 to 2.05%*
Iron (Fe)	1309-37-1	10 mg/M ³	5 mg/M ³ (oxide fume)	balance*
Molybdenum (Mo)	7439-98-7	{ 15 mg/M ³ insol. comp. 5 mg/M ³ sol. compds. }	{ 10 mg/M ³ insol. com. 5 mg/M ³ sol. compd. }	resid. to 5.25%*
Chromium (Cr)	7440-47-3	1 mg/M ³	0.5 mg/M ³	residual to 4.30%*
Nickel (Ni)	7440-02-0	1 mg/M ³	1 mg/M ³	residual to 5.50%*
Vanadium (V)	1314-62-1	{ As V ₂ O ₅ dust 0.5 mg/M ³ fume 0.1 mg/M ³ }	{ As V ₂ O ₅ dust & fume 0.05 mg/M ³ }	residual to 1.20%*

*Percentages vary depending on grade of steel--see analysis sheet sent with
invoice for specific percentages.

Section III — Physical/Chemical Characteristics

Boiling Point	Approximately	3000°C	Specific Gravity (H ₂ O = 1)	Approximately	7.9
Vapor Pressure (mm Hg.)		N.A.	Melting Point	Approximately	1535°C
Vapor Density (AIR = 1)		N.A.	Evaporation Rate (Butyl Acetate = 1)		N.A.

Solubility in Water

Insoluble

Appearance and Odor

Solid, silver to gray, becomes reddish brown with oxidation; odorless

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	None	Flammable Limits	None	LEL	N.A.	UEL	N.A.
Extinguishing Media	N.A.						
Special Fire Fighting Procedures	N.A.						

Unusual Fire and Explosion Hazards

None present as product is sold. Fine metal particles as produced in grinding,
sawing, etc., can burn. High concentrations of fines in the air may present an
explosion hazard. Good housekeeping and adequate ventilation are recommended.

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid N.A.
	Stable	X	

Incompatibility (Materials to Avoid)

Steel reacts with strong acids and hydrogen gas is generated.

Hazardous Decomposition or Byproducts

Metallic oxides.

Hazardous Polymerization	May Occur		Conditions to Avoid N.A.
	Will Not Occur	X	

Section VI — Health Hazard Data

Health Hazards (Acute and Chronic)

This product in the form it is sold does not present an inhalation, skin contact, or ingestion hazard. Subsequent operations such as welding, cutting, grinding, etc., may cause some of the ingredients to be released in a form which could affect exposed workers in one or more of the ways listed on the attached if the PEL's shown in Section II of this MSDS are exceeded. See attached.

Routes of Entry:	Inhalation?	Skin?	Ingestion?
Dust & fumes can be inhaled	Possibly	a route of entry	Possibly
Carcinogenicity:	NTP?	IARC Monographs?	OSHA Required?
Chromium (Cr)	Yes	Yes	Yes, PEL established
Nickel (Ni)	Yes	Yes	Yes, PEL established

Signs and Symptoms of Exposure
See attached

Medical Conditions Generally Aggravated by Exposure Skin disorders and respiratory tract irritation.

Emergency and First Aid Procedures

Move persons affected to fresh air. Wash contaminated skin with soap and water.

If conditions persist, consult a physician.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

N.A.

Waste Disposal Method

Sell as scrap or landfill.

Precautions to Be Taken in Handling and Storing

N.A.

Other Precautions

N.A.

Section VIII — Control Measures

Respiratory Protection (Specify Type)

NIOSH approved dust and fume respirators as required.

Ventilation	Local Exhaust As required	Special Not anticipated
	Mechanical (General) Recommended	Other N.A.

Protective Gloves
As required

Eye Protection
Recommended

Other Protective Clothing or Equipment
As required

Work/Hygiene Practices

Good personal hygiene and safe work practices.

Section VI - Health Hazard Data

This product in the form it is sold does not present an inhalation, skin contact, or ingestion hazard. Subsequent operations such as welding, cutting, grinding, etc., may cause some of the ingredients to be released in a form which could affect exposed workers in one or more of the ways listed below if the PEL's shown in Section II of this MSDS are exceeded.

Health Hazards - Signs and Symptoms of Exposure:

Acute:

- Carbon - A nuisance dust with irritation of the eyes and mucous membranes.
- Manganese - Irritation of eyes, nose and throat, metallic taste in mouth, acute pneumonia and pneumonitis (respiratory disease).
- Iron - Irritation of eyes, nose and throat, metal fume fever.
- Chromium - Irritation of eyes and mucous membranes. Dermatitis, ulcers on hands and forearms, nasal septum perforation.
- Nickel - Irritation of eyes and mucous membranes. Dermatitis (nickel itch), pulmonary edema, asthma, headache, vomiting.
- Molybdenum - Irritation of eyes and mucous membranes.
- Vanadium - [As vanadium pentoxide dust or fume, it may cause irritation of the eyes, nose, and respiratory tract.]

Chronic:

- Carbon - Slight irritation to the eyes.
- Manganese - Languor and sleeplessness, twitching and nocturnal cramps, increased upper respiratory infections and pneumonia (manganese pneumonitis), psychiatric disorders, liver cirrhosis, anemia.
- Iron - Chronic bronchitis, conjunctivitis, and siderosis (mottling of lungs).
- Chromium - Lesions of the skin and mucous membranes, possibly cancer of the nose or lungs-bronchogenic carcinoma.
- Nickel - Dermatitis and nickel itch, possible cancer of the respiratory tract-nose and lungs.
- Molybdenum - Respiratory tract irritation, possible liver and kidney damage.
- Vanadium - [As vanadium pentoxide, it can cause the same symptoms as for acute exposure. They may be more severe. Chronic bronchitis, may cause allergic skin rash.]

Alloy Steels

AISI/SAE NOS.		
1330 through 13110	.50Mo	DI-3
2315 through 2345	17-22-A	DI-4
3115 through 3140	17-22-AS	DM-2
3275	17-22-AV	En 355
3310 through 3316	182-F1	HF-1
4015 through 4051	1HRMA-20	HS220-07
4114 through 4161	2.25Cr	HS220-27
4220 through 4227	0.50Cr 0.50Mo	HS220-28
4312 through 4375	1.00Cr 0.50Mo	HS220-30
4417 through 4427	1.25Cr 0.50Mo	HS250
4615 through 4626	2.25Cr 1.00Mo	HS260
4715 through 4741	2.25Cr 1.00Mo-V	HY-80
4815 through 4822	A485-1	Krupp
5040 through 50100	A485-2	M50
5115 through 5195	A485-3	MnMoV
5295 through 52100	A485-4	N-12
5326 through 5335	Abralloy	N-13
6115 through 6187	Alloy B	N-80
8115 through 8145	Astralloy	NiCrMo
8219	CBA	NiCrMoV
8615 through 8670	CBS 1000	NiMo-1
8719 through 8740	CrMoV	NiMo-2
8820 through 8828	CrMoV-1	PSI #4
9310 through 9340	CrMoV-2	TBA-2
9415 through 9440	CrMoV-3	TBS-9
9816	CrMoV-4	TBS 1000
	CrMoV-5	TBS 600
	CrMoV-6	TDS-10
	CrMoV-7	TDS-30
	CrMoV-8	TDS-50
	CrNiMoV	TDS-70
	D-11	TDS-90
	D-6-A	TMA-80
	D-6-AC	WHS 100
	D-9	WHS 130
		WMA-80

EX10 through EX56 and/or PS10 through PS56
EX58 through EX67 and/or PS58 through PS67

These ranges and/or steel grade designations include the following variations:

1. H band chemistries, such as 1330H, etc.
2. Boron additions in the range of 0.0005 to 0.003%. This is denoted by a B between the second and third digit, such as 50B40 or 50B40H, etc.
3. Slight chemistry variation from that designated by the AISI/SAE number or other grade designation used to identify it, which is designated by an M suffix, such as 1330M, 1330HM, 50B40M, 50B40HM, etc. This may be followed by a number indicating that more than one modification exists.
4. Calcium additions for machinability or inclusion shape control, which is indicated by the suffix CA1 or CA2.
5. Resulfurized steel, which is denoted by the suffix R.

Central Steel & Wire Co.

Material Safety Data Sheet



Aluminum Company of America
1501 Alcoa Building, Pittsburgh, PA 15219

No. 3840

Common Name Aluminum Alloys	Phone No. 412-553-4001	Date 1984-12-03	Revised 1985-11-13
--------------------------------	---------------------------	--------------------	-----------------------

Hazardous Material (as Defined in 29 CFR 1910.1200)

<input type="checkbox"/> Flammable	<input type="checkbox"/> Explosive	<input type="checkbox"/> Organic Peroxide	<input type="checkbox"/> Irritant	<input type="checkbox"/> Acute Toxicity	<input checked="" type="checkbox"/> Other Health Hazard (See Sec. VI)
<input type="checkbox"/> Combustible	<input type="checkbox"/> Reactive	<input type="checkbox"/> Pyrophoric	<input type="checkbox"/> Sensitizer	<input type="checkbox"/> Ingestion	
<input type="checkbox"/> Oxidizer	<input type="checkbox"/> Water Reactive	<input type="checkbox"/> Compressed Gas	<input type="checkbox"/> Corrosive	<input type="checkbox"/> Inhalation	<input checked="" type="checkbox"/> OSHA or ACGIH Limit
				<input type="checkbox"/> Absorption	

SECTION I. Material Description

Chemical Name & Formula: Mixture (See Attachment)

Other Designation:

CAS No.: See Attachment

Manufacturer: Alcoa

SECTION II. Ingredients

See attachment for "C" alloy series groupings and ingredients by alloy series

ACGIH TLVs (1984)

AT - Total Dust - 10 mg/m³ (TWA)
- 20 mg/m³ (STEL)
- Resp. Dust & Fume - 5 mg/m³ (TWA)
*Cu - Fume - 0.2 mg/m³ (TWA)
**Ozone - 0.1 ppm (TWA)
- 0.3 ppm (STEL)

Occupational Exposure Limits

OSHA PELs

*Cu - Fume - 0.1 mg/m³ (TWA)
**Ozone - 0.1 ppm (TWA)

*Reference Section VI for processes and alloys where copper limits apply.
**Reference Section VI for processes where ozone limits apply.

SECTION III. Physical Data

Physical Form: Solid (Ingot, Wrought, Castings, etc.)
Boiling Temperature: NA
Freeze-Melt Temperature: Wide Range - generally 900 - 1200°F (482-649°C)
Vapor Pressure: NA
Evaporation Rate: NA
Specific Gravity: NA
Density: Range - generally 0.095 - 0.113 lb/in.³
Water Solubility: None
pH: NA
Color: Silvery
Odor: None

SECTION IV. Fire and Explosion Data

Flashpoint: NA	Auto-Ignition Temp.: NA	Flammability Limits in Air: NA	Lower:	Upper:
----------------	-------------------------	--------------------------------	--------	--------

Castings, ingots, sheet, plate, forgings, extrusions, etc., do not present fire or explosion hazards under normal conditions. Use fire fighting methods and materials that are appropriate for surrounding fire.

Small chips, fine turnings, and dust may ignite readily. Use coarse water spray on chips, turnings, etc. Use class D extinguishing agents or dry sand on fines. Do not use halogenated extinguishing agents on small chips or fines.

Fire fighters should wear self-contained breathing apparatus and full protective clothing when appropriate.

Dust clouds may be explosive. Prevent formation of a dust cloud.

Molten aluminum may explode on contact with water. It may also react violently with water, rust, and certain metal oxides (e.g., oxides of copper, iron, and lead).

SECTION V. Reactivity Data

Stable under normal conditions of use, storage and transportation.

For finely divided aluminum (e.g., small chips, fines):

With water: Generates hydrogen and heat slowly. Water/aluminum mixtures may be hazardous when confined.

With heat: Oxidizes at a temperature-dependent rate.

With strong oxidizers: Violent reaction with much heat generation.

With acids & alkalis: Reacts to generate hydrogen.

With halogenated compounds: Halogenated hydrocarbons can react violently with finely divided aluminum.

No. 3840

Section VI. Health Hazard Information

(See Section II for exposure limits.)

Aluminum dust/fines and fumes are low health risk by inhalation. For standard operations (e.g., milling, cutting, grinding), aluminum should be treated as a nuisance dust and is so defined by the American Conference of Governmental Industrial Hygienists (ACGIH). According to AIHA Hygiene Guide:

Toxicity by ingestion: None expected.
Skin & eyes: Not an irritant.

As stated above, most alloys have a low health risk potential. The potential for overexposure to copper fume, however, may exist when welding, flame cutting, etc. on alloys containing high amounts of copper (e.g., >2.5%). These alloys include 2XX.X, 3XX.X, & 8XX.X casting series alloys; 2XXX and 7XXX series and 4145 wrought alloys. See attachment for specific alloys. Overexposure to copper fume can result in upper respiratory tract irritation, nausea, and metal fume fever.

Nickel and chromium are contained in certain alloys at levels of 0.1% or more (see attachment). Chromium and nickel and their compounds are listed in the 3rd Annual Report on Carcinogens, as prepared by the National Toxicology Program (NTP). Their presence in our alloys, however, does not present a carcinogenic or other health concern due to either their low concentrations or the chemical form in which they are present.

Plasma arc cutting or welding aluminum can generate ozone. Overexposures to ozone can result in mucous membrane irritation, as well as pulmonary changes including irritation, congestion and edema.

Reference Alcoa MSDS No. 214 for hazards and appropriate safeguards concerning welding with aluminum.

Section VII. Spill, Leak & Disposal Procedures

Collect scrap for remelting.

RCRA Hazardous Waste No. Not Federally Regulated

Section VIII. Special Protection Information

For dust or fume exposure, use with adequate ventilation to meet the exposure limits as listed in Section II. Where the exposure limit is or may be exceeded, use NIOSH approved respiratory protection.

Select appropriate respirator (dust & fume respirator, etc.) based on the actual or potential airborne contaminants and their concentrations present.

Section IX. Special Precautions & Comments

Handling molten aluminum presents special hazards. Reference Alcoa MSDS No. 478.

Handling remelt ingot presents special hazards. Reference Alcoa MSDS No. 516.

Handling aluminum powder and granule products presents special hazards. Reference Alcoa MSDS Nos. 123, 124, 125, 126, or 127.

Chemical substance components have been reported to the EPA Office of Toxic Substances in accordance with the requirements of the Toxic Substances Control Act (Title 40 CFR Part 710).

DOT Shipping Name, Hazard Class, I.D. No. (if applicable) Not Regulated

Section X. References

American Industrial Hygiene Assoc. (AIHA) Hygienic Guide Series (Revised June 1978).

Alcoa MSDS Nos.:

123, 124, 126, 127 - Atomized Aluminum Powders; 125 - Atomized Aluminum Granules; 214 - Welding Wire;

303, C303, 326, 333, 337, C337, C384, 390, C390 - See attachment for content;

471 - Aluminum Dross; 478 - Molten Aluminum; 516 and C516 - Remelt Ingot;

517 - Aluminum Scrap

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied, can be made.

Material Safety Data Sheet

Attachment



Aluminum Company of America
1501 Alcoa Building, Pittsburgh, PA 15219

No. 3840

ALUMINUM ALLOYS* (BY SERIES) INGREDIENTS WHICH MAY BE GREATER THAN OR EQUAL TO 1% (0.1% for Nickel and Chromium)

CAS No.: Si (7440-21-3); Fe (7439-89-6); Cu (7440-50-8); Mn (7439-96-5); Mg (7439-95-4);
Cr (7440-47-3); Ni (7440-02-0); Zn (7440-66-6); Al (7429-90-5); Sn (7440-31-5)

I. Castings (Ingot, Sand, Permanent Mold, & Die)

<u>1XX.0</u>	<u>2XX.0</u>	<u>3XX.0</u>	<u>4XX.0</u>	<u>5XX.0</u>	<u>7XX.0</u>	<u>8XX.0</u>
Aluminum	Silicon	Silicon	Silicon	Silicon	Iron	Silicon
	Iron	Iron	Iron	Iron	Copper	Copper
	Copper	Copper	Nickel	Magnesium	Magnesium	Nickel
	Magnesium	Magnesium	Aluminum	Zinc	Chromium	Aluminum
	Chromium	Chromium		Aluminum	Nickel	Tin
	Nickel	Nickel			Zinc	
	Zinc	Zinc			Aluminum	
	Aluminum	Aluminum				

II. Wrought Aluminum Alloys

<u>1XXX</u>	<u>2XXX</u>	<u>3XXX</u>	<u>4XXX</u>	<u>5XXX</u>	<u>6XXX</u>	<u>7XXX</u>	<u>8XXX</u>
Aluminum	Silicon	Silicon	Silicon	Manganese	Silicon	Copper	Silicon
	Iron	Manganese	Iron	Magnesium	Iron	Manganese	Iron
	Copper	Magnesium	Copper	Chromium	Copper	Magnesium	Copper
	Manganese	Chromium	Manganese	Zinc	Manganese	Chromium	Manganese
	Magnesium	Aluminum	Magnesium	Aluminum	Magnesium	Zinc	Nickel
	Chromium		Chromium		Chromium	Aluminum	Zinc
	Nickel		Nickel		Zinc		Aluminum
	Aluminum		Aluminum		Aluminum		Tin

* Please reference the following Alcoa Material Safety Data Sheets for these specific aluminum alloys:

<u>MSDS No.</u>	<u>Alloys</u>
No. 303 - Aluminum Alloys Containing Beryllium Additions.	A357.0, A357.2, 358.2, 364.2
No. 326 - P/M Alloys Containing Cobalt Additions	P/M Alloys 7090 & 7091 - Billet & Wrought Products
No. 333 - Aluminum Alloys Containing Zinc Additions.	C8F, C9F
No. 337 - Aluminum Alloys Containing Lithium Additions.	Alithalite, Alithalloy, 2090, X8090A, X8092 and X8192
No. 390 - Aluminum Alloys Containing Lead Additions.	6262, 2011

Note: Other non-registered "C" alloys are covered by MSDSs numbered C303, C337, C384, C390, and C516

Material Safety Data Sheet

Attachment



Aluminum Company of America
1501 Alcoa Building, Pittsburgh, PA 15219

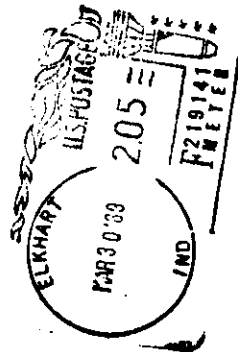
No. 3840

ALLOYS CONTAINING >2.5% COPPER (COPPER FUME LIMITS APPLY - SEE SECTION VI)

<u>2XX.X</u>	<u>3XX.X</u>	<u>8XX.X</u>	<u>2XXX</u>	<u>4XXX</u>	<u>7XXX</u>
A206.2	308.0	853.0	2011	4145	7001
208.2	308.2		2014		7050
224.0	319.0		2017		7150
224.2	319.2		2018		
242.0	331		2024		
A242.0	332.0		2025		
242.2	332.2		2036		
A242.2	333.0		2090		
295.2	333.1		2117		
296.0	380.2		2124		
296.2	A380.2		2214		
	384.2		2218		
	385.1		2219		
	A390.0		2224		
	A390.1		2319		
	390.2		2324		
			2419		
			2519		
			2618		



STAR MACHINE, INC.
1620 Middlebury St. P. O. Box 1506, Elkhart, IN 46515



SUPERFUND PROGRAM MANAGEMENT BRANCH SHSM-12
U.S. ENVIRONMENTAL PROTECTION AGENCY
230 SOUTH DEARBORN STREET
CHICAGO, ILLINOIS 60604

ATT: MS. SUSAN SWALES

SHSM